CONSUMER ELECTRONIC SHOW in Las Vegas was attended by myself and at least four subscribers. The Bally technical contingent included all the names we've seen as originators of programs. It was a pleasure to meet those people who up to then were only telephone voices. The Add-On Unit was officially introduced at a press conference Saturday. It will go into production; it has a price scheduled at $650 or less; and a delivery date of June-July. A reprinted brochure is included herein. Note the comparison of attributes with other current systems. As you can see, the full-up capability will be equal or better than comparably priced equipment. In addition, a unique feature of the machine is called 'Concurrent Processing', where more than one program can be run at once. The speed of operation is inverse to the number of programs being simultaneously conducted, apparently no real limit. They had a little sit-down theatre, and put on a show every hour with the Add-On, showing its capabilities, primarily in the area of graphics which is the most visible feature. The unit was used in a slide-show mode, where the hand control trigger was used to change "slides" while the knob was used to move a cursor up and down to pick items off a menu. Various illustrations had been made with a light pen or directly and stowed, then called up as desired. A small airplane was "assembled" from component parts and smoothly 'flown' across the screen. Time was available for question/answers. Remember, the show is for retailers and distributors, no public. A printer and mini-floppy were attached, but Bally is still saying that just about anyone's peripherals will be compatible.(these were not Bally-built items) The Add-On can search for a particular file on a peripheral and load it, at 2400 baud. The unit will have PEEK and POKE capability. The name of the total system is now Bally Computer System, so save those Arcade and Home Library Computer labels, they will be collectibles. The new Football game was shown in an adjacent semi-secluded booth. It allows the offensive team a choice of plays, then shows the field with all the players, running, blocking, etc., then the results of the play. Part of the 'show' included a demonstration of the Concurrent Processing scheme, where the screen was split vertically and the left side did the random box routine while the right side did the random line program.

THREE VIDEOCADES should be available right now, according to Ron Schwenk (916-944-2001) who said that Football (25.) Maze and Space Race (20. each) should be in his hands next week - so I'm sure other dealers will be receiving theirs as well.

NEW BASIC MANUAL is being distributed with the cartridge. The only difference I could see in content was the addition of a mention of the &(16) thru &(25) sound system. I will get a copy for inclusion in the next issue.

CASSETTE INTERFACE WIRING DIAGRAM is included. I was told of two changes in the circuit, should be obvious on the print. I've also heavied up some of the lines.

&(9) is a very interesting area. and I was introduced to some of its complexities by Brett Bilbray who commented on the mention in the last issue. As a result, I have included a pageful of my observations as a personal attempt at understanding it. I'd like to include more descriptive material - can anyone help???

ONE SUBSCRIBER asked for a grid to locate x,y points - I'd suggest that one put up a BOX 0,0,179,87,1 and then accurately measure it, and make aplastic grid overlay, as TV screens vary in size of picture or position of picture on the screen.

"NEW" COMMANDS unearthed by Tom Wood are included with this issue.

RM = REMAINDER is interesting. Normally the TBASIC swallows the remainder of a division and only tells you of the whole number part of the answer. But with the knowledge of RM, we can convert it to a decimal and print it, as:

```
INPUT A
INPUT B
C = A ÷ B
D = RM X 1000 ÷ B
PRINT C, ".", D
```

This will give you an answer that is a bit disjointed, as 3. 421
But Chuck Thomka reminded me of the PRINT #A,B statement. It bunches the printed parts together (as 3.421) so they look normal. Change the last command to

```
PRINT #1,C,".",D
```

to get this effect. There are limitations to the size of RM X 1000.

FORMAT VARIATIONS using the PRINT #A,B can be illustrated by a modification of the above program. Retain the first 4 lines, then

```
FOR N = 1 TO 20
PRINT #N,C,".",D
NEXT N
```

RS-232 SOURCE has been reported to me as R.W.Electronics,Inc. 3203 N.Western Ave, Chicago 60618. A 6½'cable molded to a 9-pin female connector at .50 each or 10 for $4.

MODEM is barely mentioned on the cassette interface box, but nowhere else. I understand that a tape recorder speaker output has gone over the telephone lines to another recorder's microphone, but that's pretty crude. We now have a telephone modem prototype here, and should have more details next time.

:PRINT is normally used with the ;LIST command to transfer data from machine memory to tape, but that's only part of the story.Dick Strauss and Brett Bilbray have discovered that :PRINT alone turns on the hand control port 3 for output. Other commands can now take effect, and so if you tell the machine to LIST, it will, and the data goes out the port. Most everyone has had the experience of punching in a lengthy program and then inadvertently touched the RESET, and poof, all is gone. Well, here is insurance. Start the recorder on Record, punch in :PRINT, and everything you key in will get taped. If there is a RESET, or the machine crashes for some reason, you can just load the tape back in and go on. Or just keep going and load the early portion later.

RUN automatically after loading the tape into the machine? Sure, the Bally tapes do. Remember that after you open port 3 with the :PRINT statement you can write anything on the keyboard and it will go on the tape. So, after the listing has been completed, punch in RUN and that's it.

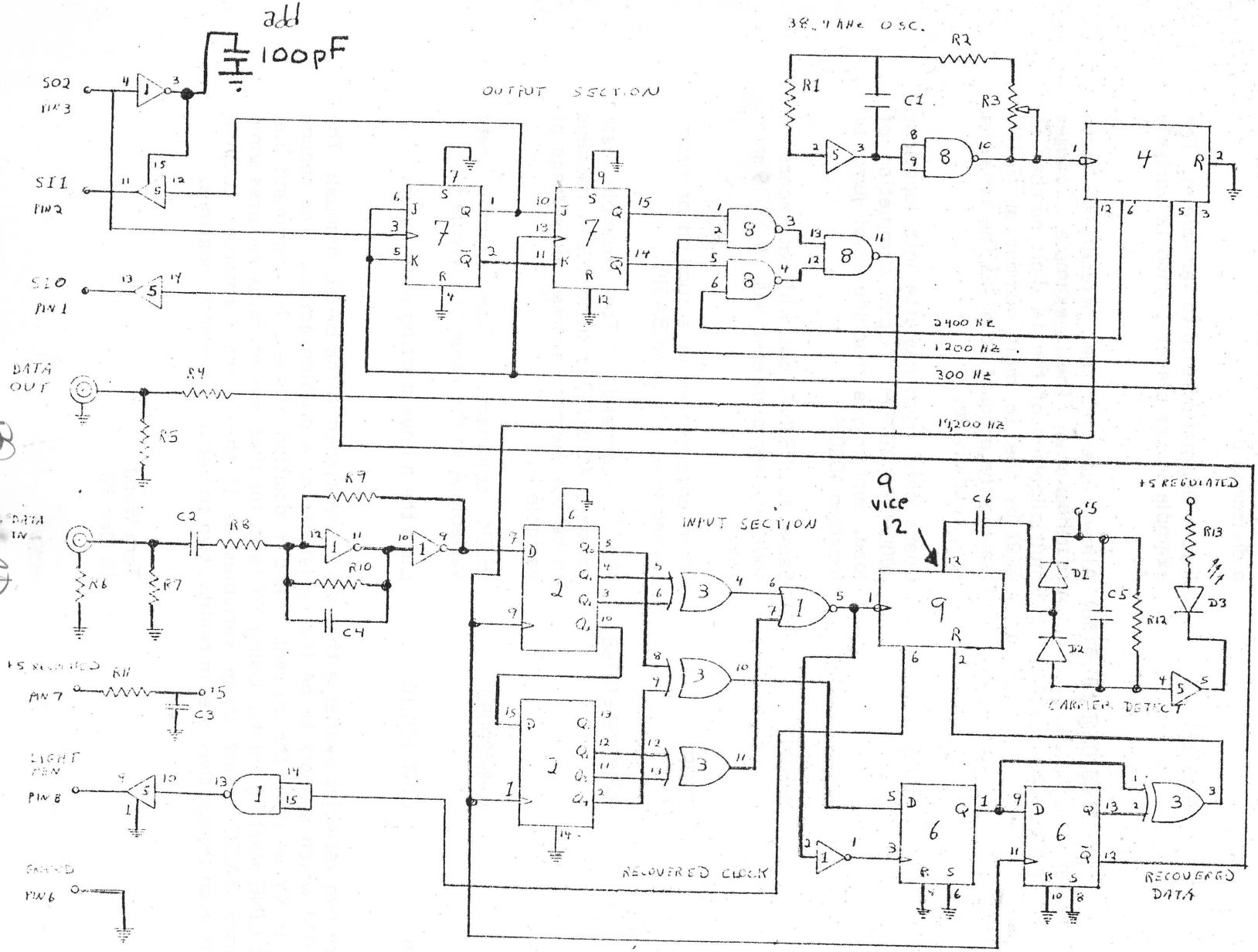
ANOTHER WAY to make it run is to complete the loading, then punch in ;GOTO 10, as discovered by Jim Unroe.The GOTO would be helpful if you wanted to start a program at some specific location other than the beginning.

COMMAND	EXAMPLE	EXPLANATION
CALL(n)	CALL(16384)	Performs a machine level program jump to decimal location (n). In the example, this jump will be to location 4000 Hex.
&(n)=m	&(16)=0	Outputs m to decimal port (n). The example sets the master sound divider to a divisor of 0.
m=&(n)	A=&(18)	Inputs decimal port (n) to variable m. The example inputs player 1 knob to variable A.
$sm,n,o	$x@(0),@(18),@(36)	Allows use of the "executive" math routines. The example causes multiplication of the 16 digit number at @(0) by the 16 digit number at @(18), leaving the product at @(36).The s may be +, -, x, or divide.
:RUN	:RUN	Loads data from cassette into locations 4000H to 407FH. Upon completion of load, performs a machine level jump to location 4000H.
*PRINT	*PRINT	Same as :PRINT, but will not record on tape any words entered with WORDS shift key.
STOP	STOP	When encountered in a running program, causes an exit back to BASIC.
%(n)=m	%(20078)=32768	POKE command. The example sets variable A to 32768 since 20078 happens to be the memory address for storage of variable A.
m=%(n)	A=%(20080)	PEEK command. The example sets variable A to the value of variable B.
LIST m,n	LIST 100,10	Lists the n lines starting with line m.

There are two variables available that aren't mentioned in the BASIC manual: The first is RM which appears to be the remainder of a division action. The second variable is XY which is the current X and Y position of the LINE command (i.e. the next LINE starting point). Using XY (and, for that matter, %(n)) requires some care, since BASIC treats these variables as if they were formatted decimal constants even though they are, in reality, two consecutive memory locations.

Tom Wood
14 Dec 78

300 BAUD AUDIO CASSETTE INTERFACE



R1	330 K	C1	390 pf
R2	15 K	C2	.1 mf
R3	20 K POT	C3	22 MF
R4	470 K	C4	100 pf
R5	1K	C5	470 pf
R6	100Ω	C6	470 pf
R7	47Ω		
R8	10K	D1	IN4148
R9	1M	D2	IN4148
R10	100K	D3	RED LED
R11	270K		
R12	10M		
R13	270Ω		

I C

1	4572	HEX GATE
2	4015	DUAL 4 BIT SHIFT REGISTER
3	4070	QUAD EXCLUSIVE OR
4	4024	SEVEN STAGE COUNTER
5	4503	HEX 3-STATE BUFFER
6	4013	DUAL D FLIP FLOP
7	4027	DUAL J-K FLIP FLOP
8	4011	QUAD NAND
9	4024	SEVEN STAGE COUNTER

M.S.F. 10/17/78